REMARKS

Claims 1, 3-8, 10, 12-19 are pending in this application and were subject to a restriction requirement. Claims 12-16 are withdrawn from consideration by election filed on July 21, 2004. Claims 1, 3-8, 10, 17-19 stand rejected. Claim 1 is objected to. Claims 1 and 17 are amended herein. Support for amended claims 1 and 17 can be found, for example, at page 3, lines 1-18 and page 8, line 29 through page 9 lines 15 of the specification as well as throughout the examples and claims as originally filed. Claim 19 is cancelled herein without prejudice or disclaimer. Thus, no new matter is added.

Claim Objections

Claim 1 is objected to because the following informality: The Examiner suggests that Claim 1, in the first line should read as "at least one chemical compound that interacts." The Applicant corrects this informality herein and respectfully submits that by correcting these informalities this claim is in condition for allowance, and removal of this objection is respectfully requested.

35 U.S.C. § 112, first paragraph

Claims 1, 3-8, 10, and 17-19 stand rejected under 35 U.S.C. § 112, first paragraph as allegedly failing to comply with written description. In particular, the Examiner alleges that the specification does not describe a representative number of species to adequately describe the broad genus of "target molecules." Furthermore, the Examiner alleges that "the specification show a reaction scheme in which an enzyme product 'P' is depicted as not associated with, but separate from an enzyme 'E'." The Examiner further alleges that the specification does not describe what spectrum results when a product and at least one compound are exposed to a target molecule or even to a target molecule that is an enzyme. Finally, the Examiner alleges that the specification does not describe a representative number of substrates or products for any target molecule.

The Applicant disagrees with all of the above allegations. First, the Applicant previously amended claims 1 and 19 to recite an enzyme rather than a target molecule, so the Examiner's first allegation does not apply to the current claims. Second, the Examiner's allegation regarding the scheme on page 8 of the application is unclear. The reaction scheme is an enzymatic kinetic reaction scheme readily understood by the skilled artisan. As described in the application this scheme depicts the reaction scheme when two substrate-competitive inhibitors (I_1 and I_2) and a substrate (S) react with an enzyme (E). The E + P at the end of the reaction indicates that product results. It is unclear from the Examiner's comments why the Examiner expects the enzyme and product to be associated. Furthermore, the Applicant respectfully submits that the current claims clearly recite that spectrum are generated for a

substrate of an enzyme. Thus, the specification and claims clearly describe which spectrum results when a substrate and compound are exposed to an enzyme.

The Applicant respectfully submits that in view of the forgoing remarks and the claims as amended, the Applicant has overcome the Examiner's rejection under 35 U.S.C. § 112, first paragraph for independent claim 1 and that this rejection should be withdrawn. Claim 19 is cancelled herein, thus, rendering rejection of this claim moot. As claims 3-8, 10, 17 and 18 depend from claim 1, either directly or indirectly, Applicant believes rejection of these claims has been overcome and that they should also be withdrawn.

35 U.S.C. § 103

Claims 1, 3-8, 10, and 17-19 stand rejected under 35 U.S.C. § 103 as being allegedly being unpatetable over Fesik, *et al.* (WO 98/48264 hereinafter "Fesik, *et al.*") in view of Peters, *et al.*, *Biochemistry* 1992, Vol. 31, pp. 10024-10030. Specifically, the Examiner maintains his allegation that Fesik, *et al.* teach generating a diffusion-filtered proton spectrum of "one or a mixture of chemical compounds," exposing one or a mixture of compounds to a target and comparing the first and second spectra. The Examiner also alleges that Fesik, *et al.* disclose assaying enzyme reactions. The Examiner concedes that Fesik, *et al.* do not disclose an NMR method comprising mixing a substrate or product of an enzyme with at least on chemical compound and exposing the mixture to an enzyme. The Examiner further alleges that Peters, *et al.* describe methods of identifying at least one chemical compound that interact with an enzyme comprising determining NMR data for the enzyme phopholipase A2.

The Applicant respectfully traverse this rejection. However, in an effort to advance prosecution, the Applicant amends claim 1 herein to recite that a NMR spectra is generated for the substrate of an enzyme. Accordingly, the Applicant amends claim 17 to delete the text "or product" from the last two words of the claim. The Applicant respectfully submits that as discussed in the previous response, Fesik, *et al.* do not teach or disclose obtaining spectra of a substrate of an enzyme. Fesik, *et al.* merely disclose a comparison of a spectrum of chemical compound alone with a spectrum of chemical compound mixed with target molecule, wherein the presence of target molecule significantly effects T2 relaxation time of residual peaks on the compound. Thus, Fesik *et al.* only disclose obtaining spectra of chemical compounds but not of a substrate of an enzyme. In addition, the Applicant submits herein that Peters, *et al.* do not disclose obtaining spectra of a substrate of an enzyme to determine compounds that interact with said enzyme. Peters, *et al.* disclose obtaining spectra of an enzyme in the presence of a competitive inhibitor and determining the conformational changes that the single inhibitor exerts on the enzyme. Peters, *et al.* determine these changes by observing spectra of an enzyme not of a substrate of a enzyme.

The Applicant respectfully submits that based on the four factors in determining obviousness from *Graham v John Deere*, 383, U.S. 1, 17-18, 148 USPQ 459, 467 (1966) and the recent Supreme Court decision in *KSR Int'l Co. v, Teleflex, Inc.* No 04-1350 (U.S. Apr. 30, 2007) the Examiner has not established *prima facie* obviousness. It remains necessary to identify the reason why a person of ordinary skill in the art would have combined the prior art elements in the manner claimed. As discussed above, neither of the cited references teach methods for identifying at least one chemical compound that interacts with an enzyme comprising determining the spectra of a substrate of the enzyme. Thus, the Applicant submits that both references are missing the essential element obtaining spectra of the substrate of an enzyme. Therefore, even if one were to combine these references, the skilled artisan would not arrive at the currently claimed invention.

The Applicant respectfully submits that in view of the forgoing remarks and the claims as amended, the Applicant has overcome the Examiner's rejection under 35 U.S.C. § 103 for independent claim 1 and that this rejection should be withdrawn. Claim 19 is cancelled herein, thus, rendering rejection of this claim moot. As claims 3-8, 10, 17 and 18 depend from claim 1, either directly or indirectly, Applicant believes rejection of these claims has been overcome and that they should also be withdrawn.

The Applicant reserves the right to prosecute, in one or more patent applications, the claims to non-elected inventions, the cancelled claims, the claims as originally filed, and any other claims supported by the specification. The Applicant thanks the Examiner for the Office Action and believes this response to be a full and complete response to such Office Action. Accordingly, favorable reconsideration and allowance of the pending claims is earnestly solicited. If it would expedite the prosecution of this application, the Examiner is invited to confer with the Applicant's undersigned attorney.

Respectfully submitted,

Andrea V. Lockenour
Attorney for Applicant
Registration No. 51,962

GLAXOSMITHKLINE
Corporate Intellectual Property - UW2220
P.O. Box 1539
King of Prussia, PA 19406-0939
Phone (610) 270-7568
Facsimile (610) 270-5090
N:\AVL\patapps\NMR\P51032\P51032 RCE\ROA - fin.doc